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10/694,795	10/29/2003	Hidekazu Tsuruoka	HITA.0452	6084

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EXAMINER	
HERNANDEZ, NELSON D	

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/694,795	TSURUOKA ET AL.
	Examiner	Art Unit
	Nelson D. Hernandez	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 12 July 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 and 11 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 and 11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Examiner acknowledges the amended claims filed on July 12, 2007. **Claims 1, 6, 7 and 11** have been amended. **Claim 10** has been canceled.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-9 and 11** have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. **Claims 1-10 and 11** are objected to because of the following informalities: the claims as presented merely recite a list of elements related to the invention. The elements are: *a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.* The Examiner understands that the elements claims are used to calculate the distance between the center of the optical axis of a lens to a particular pixel position in order to apply the necessary correction to said particular pixel as disclosed in Fig. 5 and the Specifications (pages 14-15). The elements as claimed do not establish an interrelationship between said elements that would result in the invention as describe in the Specifications.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinto et al., US 2004/0032952 A1 in view of Sato et al., JP2002-237998 A.

Regarding claim 1, Pinto et al. discloses a camera module (See fig. 1) of a lens integrated type incorporating a lens (See lens 13 integrated in camera case 11), an image sensor (Fig. 1: 35) and an image processing circuit (Fig. 1: 43), wherein said image processing circuit has correction means (See fig. 2) using, as a correction value, a value obtained by raising the distance from the central axis of an optical system including said lens to the second power (Pinto et al. discloses calculating the square of the radius from said lens to a pixel position; see page 2, ¶ 0022 – page 3, ¶0023) to correct a light intensity corresponding to the pixel position of said image sensor (Page 2, ¶ 0022 – page 3, ¶0023; page 3, ¶ 0031 – page 4, ¶ 0033; page 4, ¶ 0036-0039).

Although Pinto et al. discloses finding the distances from the center to different pixel positions, Pinto et al. does not explicitly disclose that said image processing circuit comprises a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.

However, Sato et al. discloses a camera comprising a lens (See Machine English Translation, page 4, ¶ 0014-0015; page 9, ¶ 0041; page 10, ¶ 0051 – page 13, ¶0067); an image sensor (CCD 3 as shown in figs. 1 and 4-7); an image processing circuit (formed by signal generator SG 1 in conjunction with distance calculator 4; see figs. 1 and 4-7; also figs. 9 and 10) to calculate the distances from the center of an optical axis to different pixel positions in order to perform correction to the different pixels in the captured image based on the calculated distance (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051), said image processing circuit comprising a horizontal direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a horizontal center position setting unit (provided from terminal 5X), a first adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49X, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the horizontal direction counter and the horizontal center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), a first absolute value converter (Fig. 9: 44X), a vertical direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a vertical center position setting converter (provided from terminal 5Y), a second adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49Y, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value

from the vertical direction counter and the vertical center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), and a second absolute value converter (Fig. 9: 44X) (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051).

Therefore, taking the combined teaching of Pinto et al. in view of Sato et al. as a whole, one of an ordinary skill in the art that would want to find the distance of different pixels from the center of an optical axis would realize the advantages of finding the distances with the method as disclosed in Sato et al. and would find obvious at the time the invention was made to modify the way that Pinto et al. calculate the distances from a particular pixel from the center of the optical axis by using a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter. The motivation to do so would have been to have an alternative way to find the distances between the pixels and the center of the optical axis without having to perform calculations of squares or root expansions, so that the calculation procedure can easily be represented as hardware.

Regarding claim 6, Pinto et al. discloses a camera module (See fig. 1) of a lens integrated type incorporating a lens (See lens 13 integrated in camera case 11), an image sensor (Fig. 1: 35) and an image processing circuit (Fig. 1: 43), wherein said image processing circuit has correction means (See fig. 2) using, as a correction value, a value obtained by concentric distance computation from the central axis of an optical system including said lens to correct a light intensity corresponding to the pixel position

of said image sensor (Pinto et al. discloses calculating the distance form the central axis of the lens to a pixel position by calculating square of the radius from said lens to a pixel position; see page 2, ¶ 0022 – page 3, ¶0023) (See also page 3, ¶ 0031 – page 4, ¶ 0033; page 4, ¶ 0036-0039).

Although Pinto et al. discloses finding the distances from the center to different pixel positions, Pinto et al. does not explicitly disclose that said image processing circuit comprises a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.

However, Sato et al. discloses a camera comprising a lens (See Machine English Translation, page 4, ¶ 0014-0015; page 9, ¶ 0041; page 10, ¶ 0051 – page 13, ¶0067); an image sensor (CCD 3 as shown in figs. 1 and 4-7); an image processing circuit (formed by signal generator SG 1 in conjunction with distance calculator 4; see figs. 1 and 4-7; also figs. 9 and 10) to calculate the distances from the center of an optical axis to different pixel positions in order to perform correction to the different pixels in the captured image based on the calculated distance (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051), said image processing circuit comprising a horizontal direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a horizontal center position setting unit (provided from terminal 5X), a first adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49X, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a

difference between the value from the horizontal direction counter and the horizontal center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), a first absolute value converter (Fig. 9: 44X), a vertical direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a vertical center position setting converter (provided from terminal 5Y), a second adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49Y, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the vertical direction counter and the vertical center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), and a second absolute value converter (Fig. 9: 44X) (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051).

Therefore, taking the combined teaching of Pinto et al. in view of Sato et al. as a whole, one of an ordinary skill in the art that would want to find the distance of different pixels from the center of an optical axis would realize the advantages of finding the distances with the method as disclosed in Sato et al. and would find obvious at the time the invention was made to modify the way that Pinto et al. calculate the distances from a particular pixel from the center of the optical axis by using a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter. The motivation to do so would

have been to have an alternative way to find the distances between the pixels and the center of the optical axis without having to perform calculations of squares or root expansions, so that the calculation procedure can easily be represented as hardware.

Regarding claim 11, Pinto et al. discloses a camera module (See fig. 1) of a lens integrated type comprising: a lens (See lens 13 integrated in camera case 11), an image sensor (Fig. 1: 35) and an image processing circuit (Fig. 1: 43); selection means selecting the output of said image sensor and the output of said image processing circuit for output (Page 2, ¶ 0022 – page 3, ¶0023; page 3, ¶ 0031 – page 4, ¶ 0033; page 4, ¶ 0036-0039); and an image processing circuit, said image processing circuit has correction means (See fig. 2: 71) correcting a light intensity corresponding to the pixel position of said image sensor according to the distance from the central axis of an optical system including said lens (Pinto et al. discloses calculating the square of the radius from said lens to a pixel position (page 2, ¶ 0022 – page 3, ¶0023) to correct a light intensity corresponding to the pixel position of said image sensor) (Page 2, ¶ 0022 – page 3, ¶0023; page 3, ¶ 0031 – page 4, ¶ 0033; page 4, ¶ 0036-0039).

Although Pinto et al. discloses finding the distances from the center to different pixel positions, Pinto et al. does not explicitly disclose that said image processing circuit comprises a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.

However, Sato et al. discloses a camera comprising a lens (See Machine English Translation, page 4, ¶ 0014-0015; page 9, ¶ 0041; page 10, ¶ 0051 – page 13, ¶0067); an image sensor (CCD 3 as shown in figs. 1 and 4-7); an image processing circuit

(formed by signal generator SG 1 in conjunction with distance calculator 4; see figs. 1 and 4-7; also figs. 9 and 10) to calculate the distances from the center of an optical axis to different pixel positions in order to perform correction to the different pixels in the captured image based on the calculated distance (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051), said image processing circuit comprising a horizontal direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a horizontal center position setting unit (provided from terminal 5X), a first adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49X, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the horizontal direction counter and the horizontal center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), a first absolute value converter (Fig. 9: 44X), a vertical direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a vertical center position setting converter (provided from terminal 5Y), a second adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49Y, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the vertical direction counter and the vertical center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), and a second absolute value converter (Fig. 9: 44X) (See

Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051).

Therefore, taking the combined teaching of Pinto et al. in view of Sato et al. as a whole, one of an ordinary skill in the art that would want to find the distance of different pixels from the center of an optical axis would realize the advantages of finding the distances with the method as disclosed in Sato et al. and would find obvious at the time the invention was made to modify the way that Pinto et al. calculate the distances from a particular pixel from the center of the optical axis by using a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter. The motivation to do so would have been to have an alternative way to find the distances between the pixels and the center of the optical axis without having to perform calculations of squares or root expansions, so that the calculation procedure can easily be represented as hardware.

6. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinto et al., US 2004/0032952 A1 in view of Sato et al., JP2002-237998 A and further in view of Niikawa, US 2002/0135688 A1.

Regarding claim 2, Although Pinto et al. discloses calculating the distance for the central axis position to a pixel position by using a predetermined equation, the combined teaching of Pinto et al. in view of Sato et al. fails to teach obtaining said correction value by adding a value obtained by raising the distance from the central axis of said optical system in the horizontal direction to the second power and a value

obtained by raising the distance from the central axis of said optical system in the vertical direction to the second power.

However, Niikawa teaches a camera module (See figs. 2-5) that performs correction to shading caused by the lens system (See fig. 5: 3) of the camera, wherein the distance from the central axis of the lens to a pixel position is calculated by adding a value obtained by raising the distance from the central axis of said optical system in the horizontal direction (x axis) to the second power (x^2) and a value obtained by raising the distance from the central axis of said optical system in the vertical direction (y axis) to the second power (y^2) (Niikawa teaches that the distance is calculated using the equation $r = \sqrt{x^2 + y^2}$; see col. 16, ¶ 0228-0232) and wherein said distance is used to calculate a correction value adjust the shading of said pixel (Page 1, ¶ 0012; page 2, ¶ 0056 – page 3, ¶0057; page 5, ¶ 0085; page 13, ¶ 0192-0193; page 16, ¶ 0228-0232).

Therefore, taking the combined teaching of Pinto et al. in view of Sato et al. and further in view of Niikawa as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinto et al. and Sato et al. to use a correction value that is determined by calculating the distance from the central axis to a pixel position by adding a value obtained by raising the distance from the central axis of said optical system in the horizontal direction to the second power and a value obtained by raising the distance from the central axis of said optical system in the vertical direction to the second power. The motivation to do so would have been to have an alternative method to calculate an accurate distance value from a central axis

to a particular pixel position determined using vertical and horizontal position in the image sensor.

Regarding claim 3, the combined teaching of Pinto et al. in view of Sato et al. and further in view of Niikawa as applied to claim 2 teaches obtaining said correction value by concentric distance computation by adding a value obtained by raising the distance from the central axis of said optical system in the horizontal direction to the second power and a value obtained by raising the distance from the central axis of said optical system in the vertical direction to the second power (Page 1, ¶ 0012; page 2, ¶ 0056 – page 3, ¶0057; page 5, ¶ 0085; page 13, ¶ 0192-0193; page 16, ¶ 0228-0232). Grounds for rejecting claim 2 apply here.

Regarding claim 4, Pinto et al. discloses a nonvolatile memory storing said correction value as a function corresponding to the characteristic of an optical system including said lens.

Regarding claim 5, Pinto et al. discloses a volatile memory rewritable from outside and storing said correction value as a function corresponding to the characteristic of an optical system including said lens (Page 3, ¶ 0024).

7. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niikawa, US 2002/0135688 A1 in view of Nakamura, US 2002/0008760 A1 and further in view of Sato et al., JP2002-237998 A.

Regarding claim 7, Niikawa discloses a camera module (See figs. 2-5) of a lens integrated type incorporating a lens (see lenses 300 and 301 integrated in camera 1 as shown in fig. 3), an image sensor (Figs. 3: 303 and 5: 303) and an image processing

circuit (Fig. 5: 120), wherein said image processing circuit has correction means (See fig. 5) using, as a correction value, a value obtained by raising the distance from the central axis of an optical system including said lens in the horizontal direction (x axis) to the second power (x^2) or a value obtained by raising the distance from the central axis of said optical system in the vertical direction (y axis) to the second power (y^2) (Niikawa teaches that the distance is calculated using the equation $r = \sqrt{x^2 + y^2}$ (see col. 16, ¶ 0228-0232) and wherein said distance is used to calculate a correction value adjust the shading of said pixel (Page 1, ¶ 0012; page 2, ¶ 0056 – page 3, ¶0057; page 5, ¶ 0085; page 13, ¶ 0192-0193; page 16, ¶ 0228-0232).).

Niikawa does not explicitly disclose that said value is obtained by multiplying a distance value by a predetermined coefficient to correct a light intensity corresponding to the pixel position of said image sensor and that said image processing circuit comprises a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.

However, Nakamura teaches a camera module (See figs. 1-4) of a lens integrated type incorporating a lens (see lenses 300 and 301 integrated in camera 1 as shown in fig. 3), an image sensor (Figs. 3: 303 and 5: 303) and an image processing circuit (Fig. 4: 2111), wherein said image processing circuit has correction means using (See fig. 5), wherein said image processing circuit has correction means (See fig. 6) using, as a shading correction value, a value obtained by multiplying a distance value from the central axis to a pixel by a predetermined coefficient (See figs. 11 and 12) to

correct a light intensity corresponding to the pixel position of said image sensor (Page 1, ¶ 0013; page 5, ¶ 0092 – page 6, ¶ 0097).

Although Nakamura does not explicitly disclose that the coefficient is being multiplied by the distance en the horizontal direction raised to the second power or to the vertical direction raised to the second power, one of ordinary skill in the art would realized at the time the invention was made to modify Niikawa with the concept of multiplying a correction coefficient by a particular distance from the central axis to a pixel position as taught by Nakamura to have a correction coefficient multiplied by either the horizontal distance raised to the second power (x^2 in Niikawa) or the vertical distance raised to the second power (y^2 in Niikawa) (which would be multiplied since the distance in Niikawa is determined using the horizontal distance raised to the second power and the vertical distance raised to the second power, so that a coefficient is multiplied by both the horizontal and vertical distances). The motivation to do so would have been to improve the image quality of a captured image by correcting the deterioration of the image quality as suggested by Nakamura (Page 1, ¶ 0013).

The combined teaching of Niikawa, in view of Nakamura fails to teach that said image processing circuit comprises a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter.

However, Sato et al. discloses a camera comprising a lens (See Machine English Translation, page 4, ¶ 0014-0015; page 9, ¶ 0041; page 10, ¶ 0051 – page 13, ¶0067); an image sensor (CCD 3 as shown in figs. 1 and 4-7); an image processing circuit

(formed by signal generator SG 1 in conjunction with distance calculator 4; see figs. 1 and 4-7; also figs. 9 and 10) to calculate the distances from the center of an optical axis to different pixel positions in order to perform correction to the different pixels in the captured image based on the calculated distance (See Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051), said image processing circuit comprising a horizontal direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a horizontal center position setting unit (provided from terminal 5X), a first adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49X, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the horizontal direction counter and the horizontal center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), a first absolute value converter (Fig. 9: 44X), a vertical direction counter (SG 1 counts the number of pixel positions in both the horizontal and vertical direction), a vertical center position setting converter (provided from terminal 5Y), a second adder (Fig. 9: 49X; although Sato et al. shows a subtractor 49Y, one of an ordinary skill in the art would realize that a adder (as described in the Application Specifications and Fig. 5) works as a subtractor by changing the polarity of one of the inputs in order to find a difference between the value from the vertical direction counter and the vertical center position setting converter, thus the subtractor in Sato et al. has the same function as the adder as disclosed in the Applicant's Specification), and a second absolute value converter (Fig. 9: 44X) (See

Machine English Translation, page 3, ¶ 0012 – page 7, ¶ 0035; page 8, ¶ 0039; page 9, ¶ 0042-0044; page 10, ¶ 0051).

Therefore, taking the combined teaching of Niikawa, in view of Nakamura and further in view of Sato et al. as a whole, one of an ordinary skill in the art that would want to find the distance of different pixels from the center of an optical axis would realize the advantages of finding the distances with the method as disclosed in Sato et al. and would find obvious at the time the invention was made to modify the way that Niikawa and Nakamura calculate the distances from a particular pixel from the center of the optical axis by using a horizontal direction counter, a horizontal center position setting unit, a first adder, a first absolute value converter, a vertical direction counter, a vertical center position setting converter, a second adder, and a second absolute value converter. The motivation to do so would have been to have an alternative way to find the distances between the pixels and the center of the optical axis without having to perform calculations of squares or root expansions, so that the calculation procedure can easily be represented as hardware.

Regarding claim 8, limitations can be found in claim 7.

Regarding claim 9, limitations can be found in claim 7.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 9:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

TUAN HO
PRIMARY EXAMINER

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernandez
Examiner
Art Unit 2622

NDHH
September 11, 2007